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Sem 3rd Automation & Robotics

Sub : Digital Electronics

Time : 3 Hrs. **M.M. : 60**

SECTION-A

Note: Multiple Choice Questions. All Questions are compulsory. (6x1=6)

Q.1 The number of digits in Hexadecimal system is

a) 8 b) 16

c) 2 d) 10

Q.2 The NAND gate is AND gate followed by

a) AND gate b) NAND gate

c) NOT gate d) EX OR gate

Q.3 Convert $(1101101)_2 = (\ )_8$

a) 114 b) 155

C) 117 d) 116

Q.4 According to Commutative Law of Addition

a) ABC = (AB) C b) B = B + B

c) A+B = B+A d) None of the above

Q.5 A Half Adder can add _____ bits.

a) 4 b) 2

c) 3 d) 5

Q.6 A 8:1 MUX has _____ select lines.

a) 5 b) 3

c) 4 d) None of the above

Section-B

Note: Objective type questions. All questions are compulsory. (6x1=6)

Q.7 A byte represent _____ bits.

Q.8 Full form of ECL is _____.

Q.9 1's complement of 1101100 is _____.

Q.10 A Decoder performs the reverse operation of _____.

Q.11 EPROM is _____ (Volatile/Non-Volatile) memory.

Q.12 What is Race-Around Condition?

Section-C

Note: Short answer type Question. Attempt any Eight questions out of Ten Questions. (8x4=32)

Q.13 (a) Convert (01011001010)2 into Octal number and Hexadecimal number.

(b) Find the 2's complement of 10100101.

Q.14 Explain AOR gate as Universal gate.

Q.15 Explain Full Adder with circuit diagram.

Q.16 Design a 32:1 MUX by using 16:1 MUX and OR gate.

Q.17 Write any five differences between Latch and Flip Flop.

Q.18 Explain the working of D Flip Flop.

Q.19 Explain PIPO with the help of diagram.

Q.20 Write any five differences between Static and Dynamic memories.

Q.21 what is ROM? What are the advantages of ROM?

Q.22 State and explain Demorgan's theorem.

Section-D

Note: Long answer questions. Attempt any Two question out of Three Questions. (2x8=16)

Q.23 Simplify using K-map and realize the circuit using NAND gates.

$Y = m(1,2,3,5,6,7,9,13,14)$

Q.24 Explain the working of Ring Counter with the help of pulse diagram and truth table.

Q.25 Explain the working of Dual Slope Analog to Digital Converter with circuit diagram.